Ways for Better Energy Efficiency in Existing Buildings

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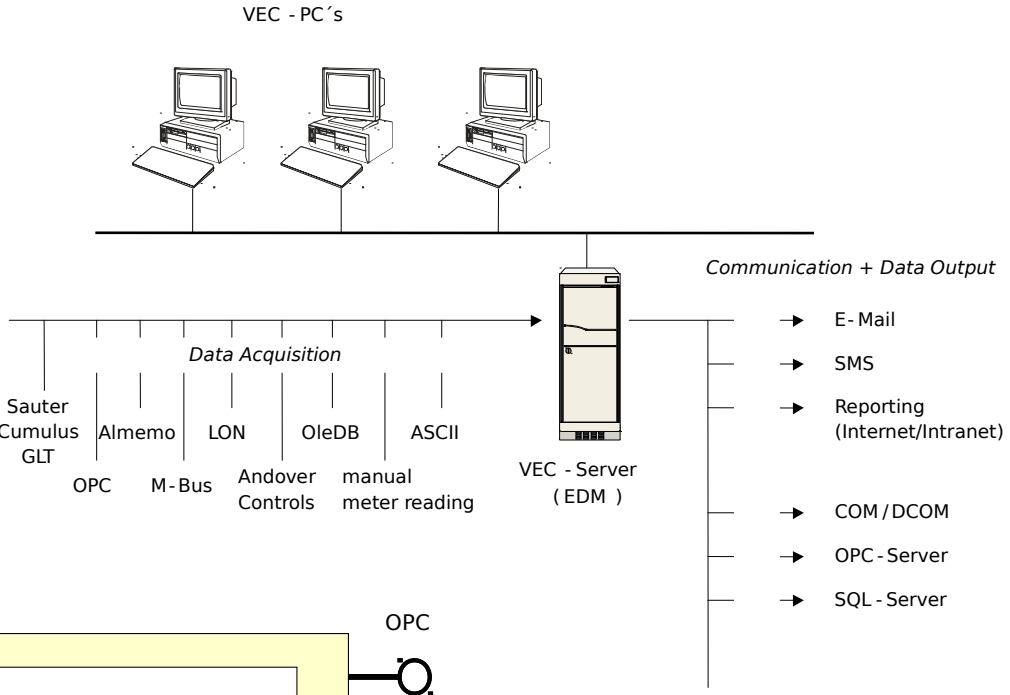
Goals

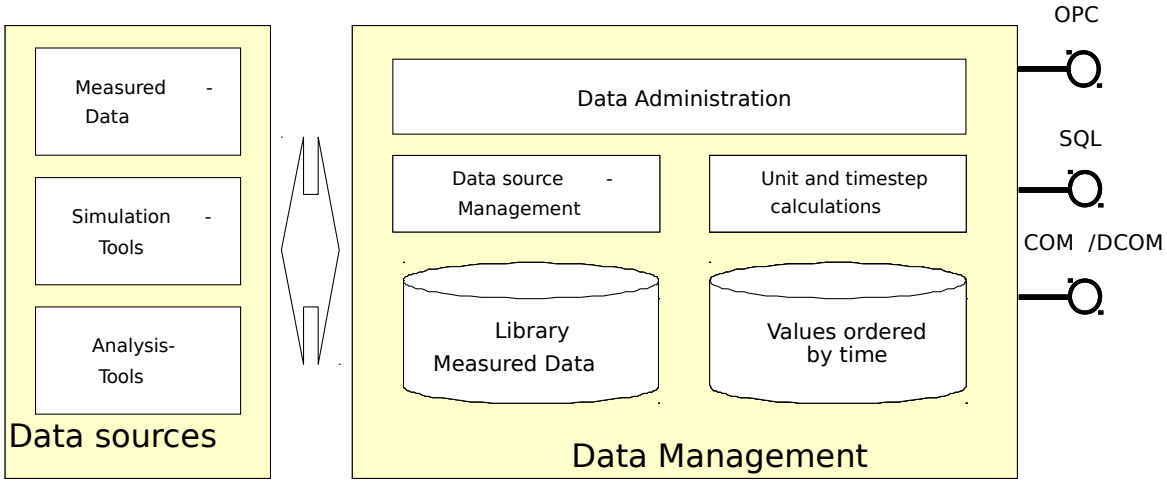
- Identify energy saving potentials
- Define measures to be taken
- Realize the defined measures
- Implement an energy management system
- Control the consumptions

Project Phases

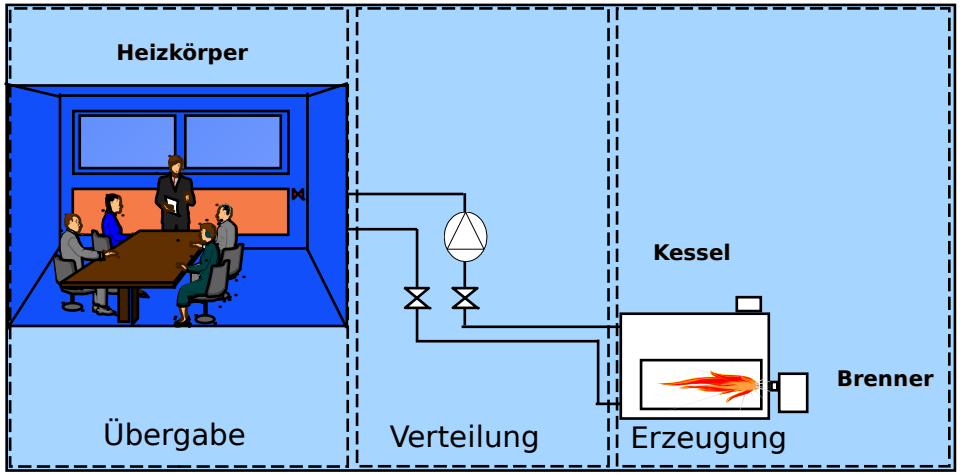
- First analysis of campus buildings
- Data acquisition system
- Analysis of individual building
- Computer modeling and on-line data acquisition
- Evaluation
- Results

Data Acquisition and Communication



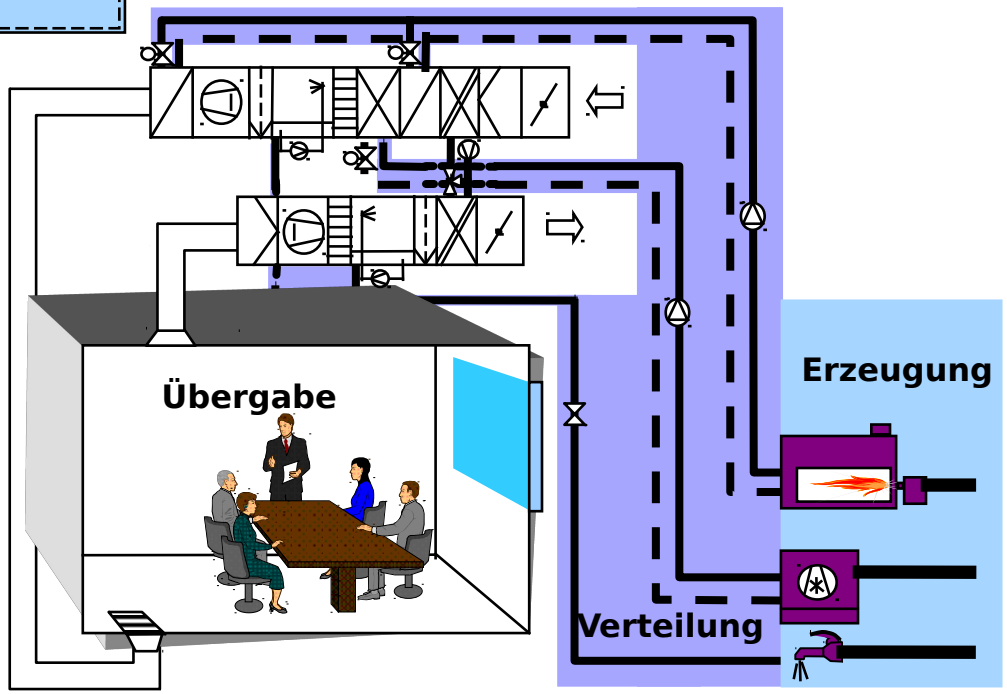


Case Study Building

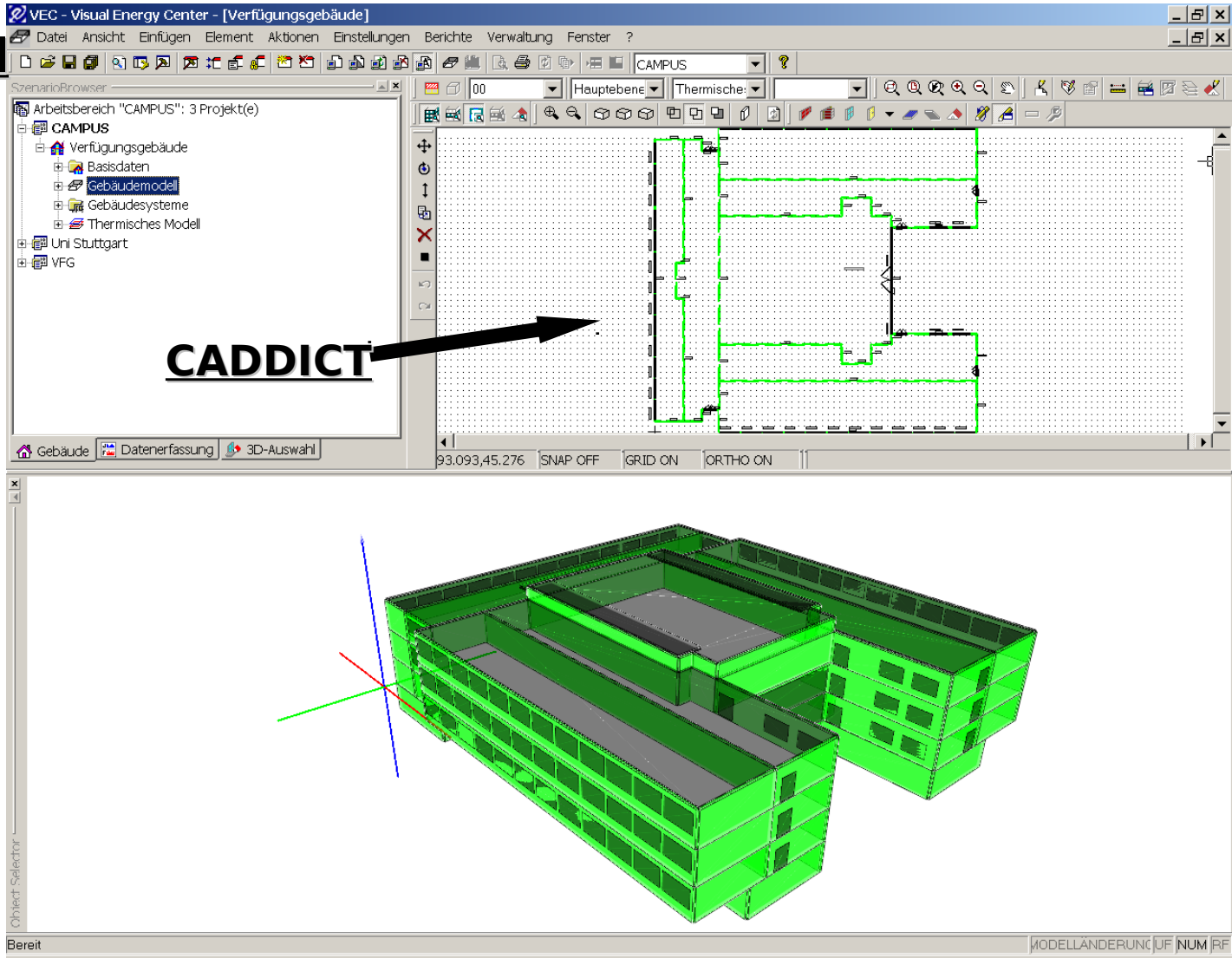


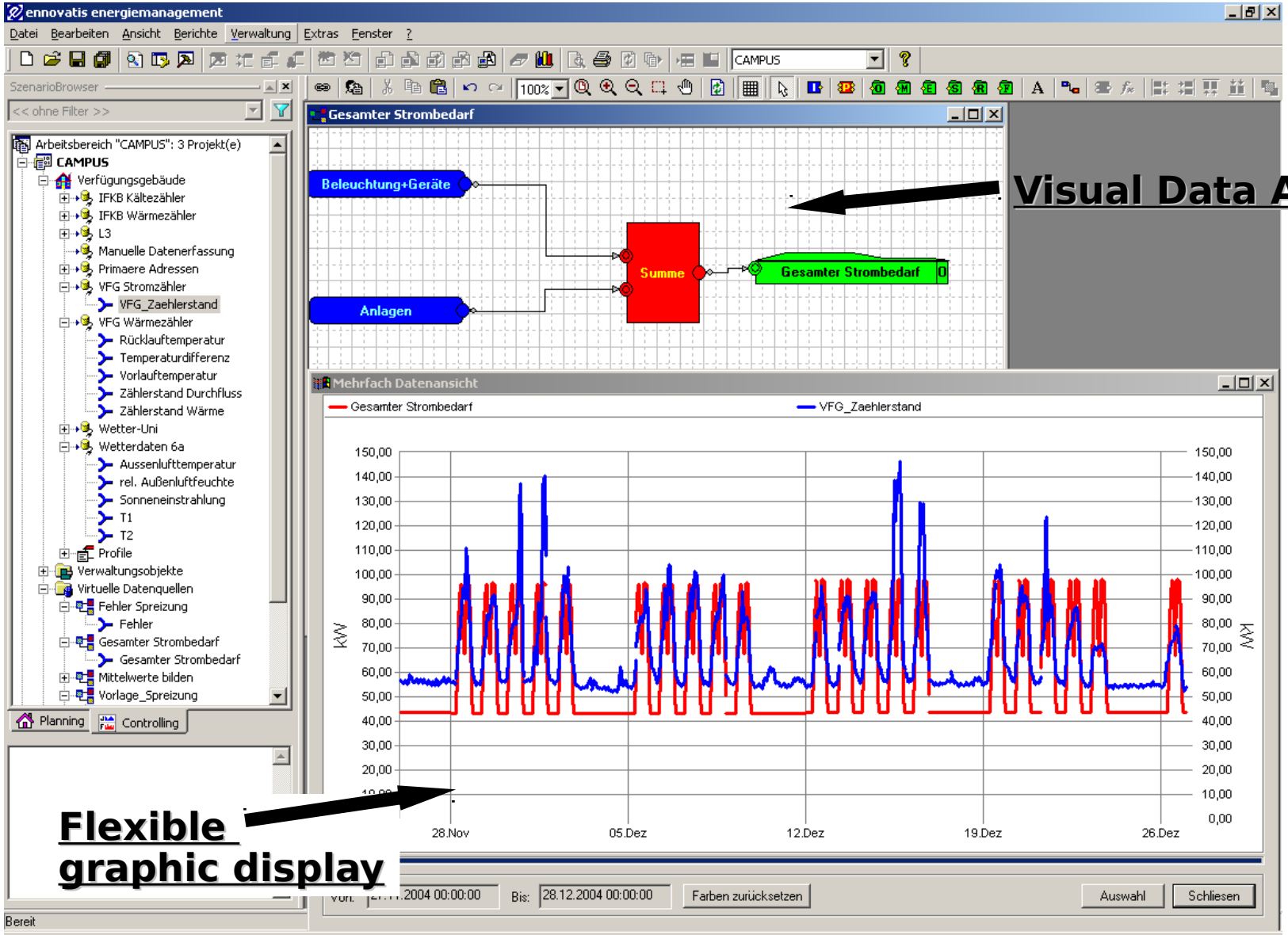
Heating System

Air Conditioning System



Building Model

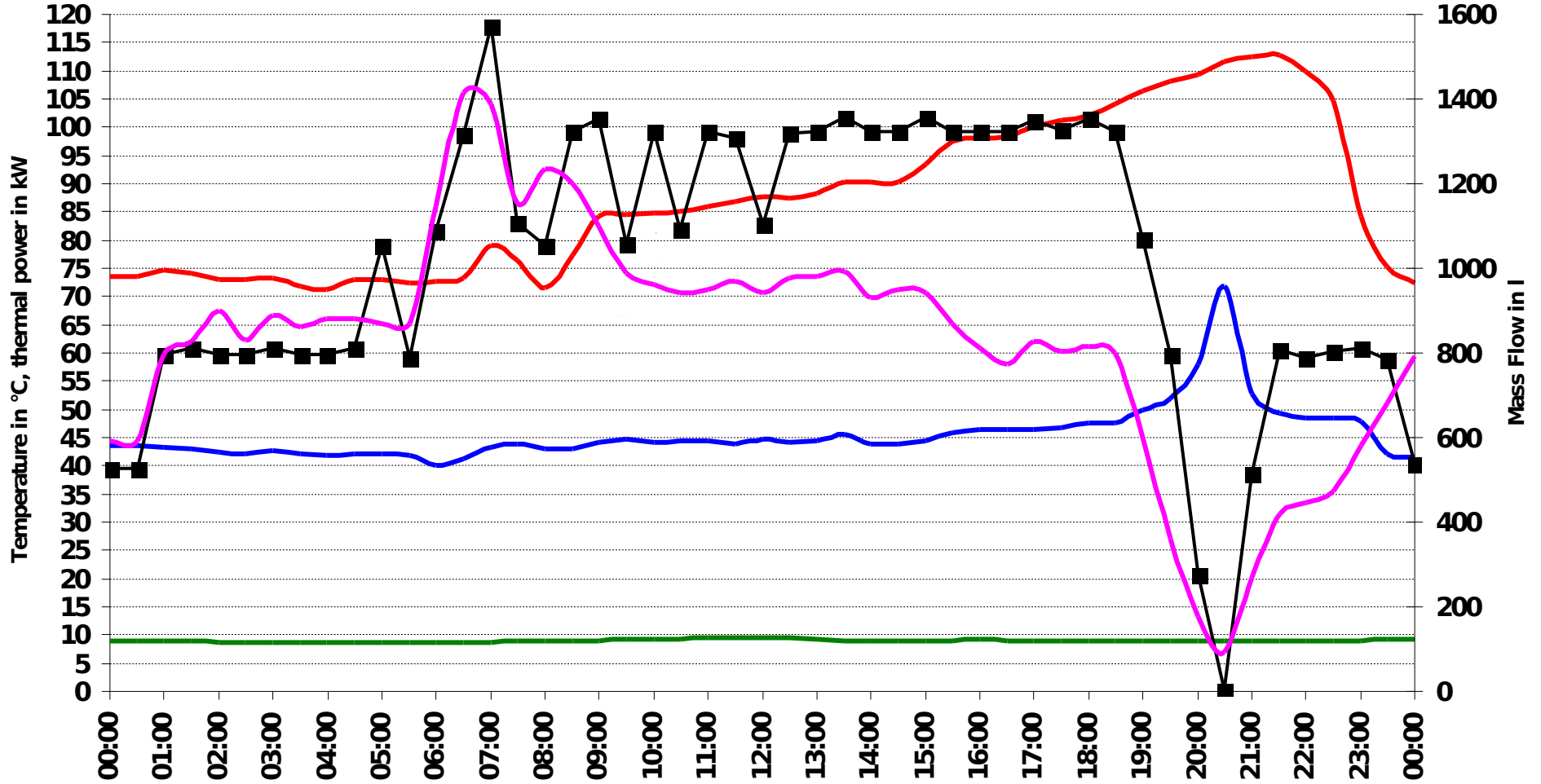




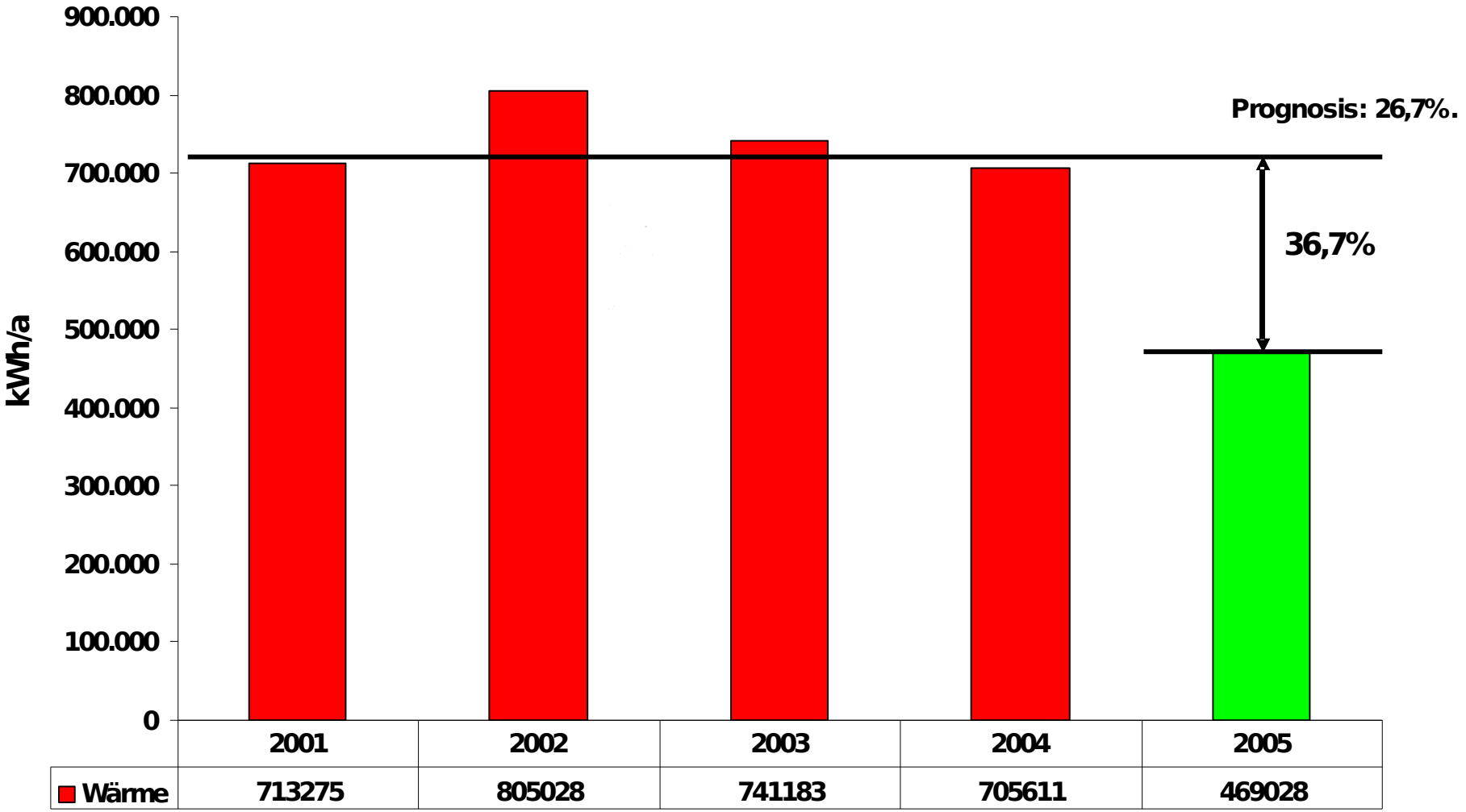
Visual Data Analys

Flexible graphic display

Typical Temperature-, Power- and Mass Flowcharacteristics (Nov. 2004)



Thermal consumption of the case building



Results and Conclusions

- **Electrical energy saved**
  - **67.500kWh/a, air conditioning ~ 30%**
  - **3.400kWh/a, heating ~ 45%**
- **Thermal energy saved**
  - **150.000kWh/a ~ 27%**

- **Existing buildings have a big energy saving potential**

- **The necessary capital cost to save about 30% are low**

- **An energy management system is necessary**